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ABSTRACT

A study assessed the impacts of an entire career guidance program in a school. Research on the effects of guidance and counseling using high school students gave an overall picture of research on guidance interventions as providing conflicting conclusions and as being confounded by complex interactions between student and program characteristics as well as by type of treatment. Evaluating the impact of career guidance was made difficult due to diffuse goals, objectives, and methods and alternative interpretations of guidance functions. The study assessed effects of school career guidance programs on five outcomes: locus of control, self-esteem, perceived ability to complete college, educational expectation, and occupational expectation. Data were part of the High School and Beyond survey database. Five broad categories of variables were used: outcomes, career guidance program characteristics, lagged outcome measures, socioeconomic background and ascribed status characteristics, and geographic regions. The statistical analyses consisted of cross-lagged regressions in which time-two measures of outcomes are dependent variables and the regressors are comprised of lagged endogenous variables and exogenous variables. These data indicated that attending a school with an active career guidance program did not have much effect of any of the outcomes studied. A five-page list of references concludes the paper. (YLB)

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OUTCOMES OF CAREER GUIDANCE AND COUNSELING IN HIGH SCHOOL

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OUTCOMES OF CAREER GUIDANCE AND COUNSELING IN HIGH SCHOOL

Introduction

This paper examines student outcomes of career guidance and counseling programs in high school. All outcome variables are defined on individual high school students, but the guidance and counseling "interventions" are defined at the school level. The guidance and counseling program at each school is characterized by the quantity and diversity of services provided. The fundamental question, then, is: Do students attending schools with active guidance programs more nearly achieve certain educational goals than do students attending other schools?

Evaluation Studies

To date, assessment of the outcomes of guidance and counseling from empirical research primarily has relied on interventions examining (1) career planning, exploration or information-seeking, most often determined by student self-reported actions taken after exposure to treatment; (2) decision-making or career maturity, assessed by various instruments such as the Career Maturity Inventory (CMI) and the Career Development Inventory (CDI); and (3) a residual category containing various outcomes such as self-knowledge and appraisal, scholastic achievement, and school attendance. Although many interventions seem to provide at least some beneficial effects (Spokane and Oliver, 1983), a variety of interventions often appear to generate similar outcomes, thus suggesting the possibility of Hawthorne effects occurring in some studies. On the other hand, Spokane and Oliver (1983) note that frequently it is found that a given treatment has the expected effects on some outcomes but not on others.

Conclusions from studies examining career exploration or information-seeking outcomes for high school students are difficult to compare, primarily because some studies address the issue of treatment by attribute interactions while others do not. For example, some studies conclude that there are no consistent differences between experimental and control groups regarding increased information-seeking (Thoresen et al., 1970; Davis and Sanborn, 1973; Thoresen and Hamilton, 1972; Zytowski, 1977). Some of these studies report interactions between certain subgroups within the experimental group, however, such as treatment-by-sex (Krumboltz and Thoresen, 1964); treatment-by-SES of school attended (Thoreson et al., 1970) treatment-by-counselor/school (Krumboltz and Thoresen, 1964). Other interactions include treatment-by-motivation (Borman, 1972); treatment-by-counselor/school differences and type of setting (group or individual: Krumboltz and Thoresen, 1964), along with treatment-by-sex, counselor/school, and setting (Krumboltz and Thoresen, 1964). Davis and Sanborn (1973) found main effects of treatment as well as a sex-by-grade level interaction.

Thoresen and Hamilton (1972) found that both peer modeling and modeling plus usage of career materials increased career knowledge, but materials without modeling did not result in significant differences (Thoresen and Hamilton, 1972). On career knowledge and use of information, both treatments and their combination were significant. Borman (1972) found no variance between types of treatment (individual counseling-reinforcement, individual exposure to a guidance tape, and control); however, more motivated students responded to the guidance tape while those less motivated responded better to individual counseling. One study utilizing the Vocational Exploration Group (VEG) with ninth grade Mexican-American students reported only significant differences

for knowledge of job functions (Bergland and Lundquist, 1975). In summary, treatment per se does not seem unequivocally to produce increased career information-seeking as a short-term goal. On the other hand, specific treatments may benefit certain sub-populations of students, e.g., effects may differ by sex, grade level, motivation level, and exposure to reinforcing school- or counselor-specific factors.

A second area of empirical research treats career maturity (attitudes and knowledge about the work world) and decision-making skills as outcomes. No significant differences emerge from Swails and Herr's (1976) study of vocational maturity and decision-making from any of the three treatments (group counseling, counseling using a peer model, and use of a career game). Swails and Herr suggest that these findings indicate the complex nature of the vocational development process as well as the career maturity construct. Carey and Weber's (1979) analysis of participation in an experience-based career program did not increase work attitudes maturity between those participating and those not. Zytowski's (1977) study measuring certainty of and satisfaction with occupational choice as a result of exposure and exploration of students' career interest profiles led to conclusions of no significant differences between experimental and control groups; only self-knowledge increased. On the other hand, Brenner and Gazda-Grace (1979) did report significant but higher gain scores on decision-making ability of an all-female group after participation in a decision-making course emphasizing self-knowledge, occupational information acquisition, and career planning than were observed for the control group (mixed male and female experimental and control groups). Yates et al. (1979) found significant gain scores for knowledge and choices of jobs (but not for planning or problem-solving) as a result of participation in the

Vocational Exploration Program (VEG). Neither of these latter two studies examined possible interaction effects such as treatment-by-sex, however.

Indeed, interaction does play an important part in studies of not only information-seeking but also career maturity when the research design takes such a possibility into account. Hanson and Sander (1973) examined realism of choice of vocational plans and found that "overshooters" (those with highly unrealistic vocational plans compared to their achievement, interest and aptitude, and backgound) did become more "realistic" in their vocational plans with group counseling, while "undershooters" benefitted more from individual counseling. Flake et al. (1975) reported that interactive effects occurred over time for both a self-appraisal score and a total score for career maturity: the experimental group increased both scores between pre- and post-test, while those of the control group declined. Career attitude gain scores for the experimental group also reached significance.

A few studies have examined effects of school-level guidance programs. For example, Treblico (1984) analyzed career maturity and career curriculum practices and policies in 38 Australian metropolitan secondary schools. Using both student data (job attitudes and certainty, locus of control, and decision-making) as well as data from principals, career teachers, and subject-matter teachers, Treblico compared schools on the basis of their career education practices. Major conclusions he reported were that: (1) schools with career programs who emphasized student self-awareness had students with higher career maturity in the eleventh grade than schools which did not and (2) higher career maturity was evident for students in schools with characteristics such as administrative and staff support, availability of career resource materials, and satisfaction of the career teacher. Nevertheless, no single school or student factor explained higher career maturity:

rather, schools which had such structural and program characteristics in place and emphasized student self-awareness reported higher levels of career maturity in students. Presumably, career maturity resulted from exposure to school structure and program design for students whose self-awareness was congruent with such exposure, although a longitudinal design would strengthen these conclusions. Myers et al. (1975) paired 24 high schools on student background characteristics, location, dropout rate, and size of counseling service. Using random assignment, one of each pair of schools was designated as experimental and the other as control. As a result of tenth graders' use of a computer-based educational and occupational exploration program, Myers et al. reported the following: (1) significant gains in planfulness and knowledge/use of resources for occupational exploration for the experimental group (2) significant gains in knowledge and use of resources, as well as information and decision-making for females. Computer use time may have confounded these conclusions, however. Planfulness and knowledge/use of resources increased with increased computer use time and gains were larger with higher use times than with lower (e.g., 5-7 hours vs. 2-4 hours). Another study (Maola and Kane, 1976) reported that the computer group learned more about occupational information than the counseled group, who learned more than the control group.

The third set of studies addresses a group of heterogeneous outcomes, including self-knowledge, school attendance, and achievement. Yates et al. (1979) reported self-knowledge gain scores increased as a result of participation in the Vocational Exploration Group (VEG) program to stimulate work attitudes and competencies, and Zytowski (1977) concluded that accuracy of self-information increased for due to access to information and interpretation of occupational profiles (but only for interested students). For attendance

and academic performance outcomes. Carey and Weber (1979) did not find significant differences between students participating in an experience-based career education program and those in the regular curriculum; only the English language skills (mechanics of language and expression) differed between the two groups in favor of the controls. In a review of the effects of guidance and counseling processes on school achievement, Herr (1982) concluded that high school students benefitted by guidance and counseling in four areas: (1) determining more realistic choices of coursework and academic achievement for those exposed to guidance and counseling over those not, (2) using counseling to improve scholastic performance for those who had adequate ability and chose to participate, (3) reducing class-cutting and disruptive classroom behaviors and raising grade point averages for lower SES students, and (4) increasing overall levels of student achievement in schools where staff, administration, parents, and guidance personnel collaborated in dealing with students experiencing personal problems. Common themes evident in the studies of high school students Herr reviewed are the importance of guidance and counseling for: (1) those who are under-achievers, socioeconomically disadvantaged, experiencing personal or social stress, or holding less realistic academic goals and (2) those with adequate ability and motivation.

Several reviews summarize the empirical work on career guidance outcomes (Spokane and Oliver 1983; Campbell, et al. 1983; Herr 1982). Spokane and Oliver provide the most comprehensive review because they compute effect sizes in their meta-analysis of available research.

The present study offers somewhat different conclusions than those indicated by Spokane and Oliver for several reasons: (1) Spokane and Oliver utilized studies of a variety of client populations; the present study

examines high school students only. (2) Of the 18 studies with high school students as subjects cited by Spokane and Oliver, 9 included group/class interventions; 8 were individual interventions; and 4 were alternative interventions, e.g., computers (3 studies used two types of settings). Therefore, over one-half (12 of 21) of the interventions for these studies fell into categories for which Spokane and Oliver admitted that their conclusions were less certain, due to the availability of fewer studies and considerable effect size variations. (3) Spokane and Oliver aggregate effects that are not statistically significant in the same manner in which they handle those that are significant. Thus, for example, one study (Bergland and Lundquist, 1975) reported one out of eight statistically significant differences between experimental and control groups, but Spokane and Oliver treat all eight differences in the same way.

Summarizing the research on the effects of guidance and counseling utilizing high school students leads to an overall picture of research on guidance interventions as (1) providing conflicting conclusions about whether those receiving treatments accrue more benefits than those not receiving treatment, suggesting that these studies indicate what specific aspects of guidance and counseling could do rather than what it has done to affect student behavior (Herr, 1982) and (2) confounded by complex interactions between sex, SES, school and guidance program characteristics (e.g., staff and administrative support, career resource availability) as well as by type of treatment (group or individual). Few studies provide for such complexities in their design; those that do so hint at spurious effects other studies may not have addressed. The most consistent effects of career interventions for high school

students seem to be in increasing career information knowledge and planfulness, providing students with more congruent and appropriate occupational choices, and increasing self-awareness. These effects are potentially important when placed within context, e.g., as a first-stage outcome in which awareness can lead to interest in seeking information or better decision-making for specific student sub-populations. Also guidance and counseling probably does not lead to dysfunctional outcomes, i.e., the target behavior does not deteriorate as some psychotherapy studies have noted (Herr, 1982).

Nevertheless, the results of these intervention studies must be interpreted cautiously and not used to generalize to high school populations in general. Primary reasons for caution are: (1) students serving as subjects in interventions are often volunteers or students interested in career guidance. Researchers who did include nonvolunteers often lost a substantial proportion of subjects due to unavailability (Zytowski, 1977), or found treatment-by-motivation interactions (Hanson and Sander, 1973; Borman, 1972). (2) Many nonrandom assignment studies reviewed here did not adjust for pretreatment differences between experimental and control groups on the dependent variable, nor did they include extensive controls for status characteristics of respondents (e.g., Carey and Weber, 1979; Borman, 1972; Zytowski, 1977). (3) Most intervention studies examine specific treatments within one school, providing limited information about the effectiveness of guidance approaches or on the effectiveness of guidance compared to other interventions, e.g., experiential education. In addition, the effect of career guidance programs on student outcomes in one school may be difficult to generalize to other schools. For example, Treblico's study indicated that factors such as administrative and staff support for guidance, counselor satisfaction, and resource

availability should be included as important variables creating interaction effects. Also, "reactive" or intervention studies in schools examining a particular group of students cannot provide valid assessment of an entire school guidance program. Moreover, the long-term outcomes experienced by those exposed to counseling and guidance in high school versus those not exposed, e.g., by higher income, better academic records, and college and employment success (Herr, 1982), may not accrue to those involved in short-term studies. Finally, Spokane and Oliver (1983) emphasize that subjects receiving conventional treatment do not constitute control but merely comparison groups. It is concluded that the impact of career guidance programs requires further in-depth examination before firm conclusions regarding the effectiveness of career guidance are justified.

To recapitulate briefly, most assessments of career guidance outcomes consist of highly focused interventions, use the experimental design as a model, and rely on specialized samples. Because students are likely to be aware that they are receiving special attention in these settings, the interventions may be "reactive." The treatment activities and the outcome measures are closely coordinated. Student scores on the outcome measures are measured shortly after completion of the treatment. As summarized by Spokane and Oliver (1983), this type of intervention tends to produce the outcomes it was intended to produce. But careful reading of the original studies shows many complex statistical interactions and reveals that statistically nonsignificant results are treated as equivalent to those that are statistically significant by Spokane and Oliver.

Although the present study is related to the studies discussed above, it differs in three important respects. First, the purpose of this study is to

assess the impacts of an entire guidance program in a school rather than one (or a few) specific "interventions." Second, the present study draws on a broader spectrum of social science theory, research, and commentary than the typical evaluation study. Consequently, the paper not only evaluates whether career guidance programs perform the functions implied by the explicit goals of guidance, but also assesses other consequences that are suggested by the critics. Third, the data used in the paper are taken from a large multipurpose survey (High School and Beyond). Consequently, the results are more nearly generalizable than are those of most other studies of guidance, and the outcome measures are not so closely tailored to the "treatments" as has been true in past research.

Guidance Goals, Objectives, and Methods

Evaluating the impact of career guidance is not a simple task, because the goals are diffuse, goals fade into objectives, and objectives may be viewed as part of the methodology for achieving other objectives or goals ("enabling objectives"). Shertzer (1982:16) states: "The most frequently expressed goal of guidance in the nation's schools is the advancement of students' personal development." The primary strategy in achieving this diffuse result is expressed by Shertzer in the following terms: "In that setting [schools], guidance seeks to help students marshall intellegence about themselves and the environment, understand their experiences; and engage in planful behavior to achieve their maximum potentialities (p. 16)." This statement also lacks the specificity needed to provide a clear guide in assessing the outcomes of guidance. Shertzer supplements it with a lengthy list of relatively specific outcomes such as use of information, improved grades, increase satisfaction with

school, decrease discipline problems in school, reduce school drop out rates, reduce "antisocial" behavior, increase participation in extracurricular activities, and increase consistency between career goals and abilities. Recent reviews of empirical assessments of guidance outcomes (Spokane and Oliver 1983; Campbell, et al. 1983; Herr 1982; Oliver 1978) also reveal a bewildering variety of outcomes. Herr (1982), for example uses the following categories to classify the outcomes: school achievement; self-concept, self-esteem, and mental health; career development, planning, education and choice; transition to work and work adjustment; and delinquency.

With so many potential outcomes of guidance, how is one to evaluate it? If guidance is shown to have a positive effect on, say, occupational information but not on grades or test scores, is it effective or not? Clearly, it is desirable to identify central aspects of the philosophy of guidance and counseling to use as a starting point in assessing whether guidance and counseling achieves its purposes. Without doubt the focal idea in career guidance is that individuals must be taught information about careers, must achieve self understanding, and connect knowledge of careers and self through a process of "true reasoning." Parsons (1909) first espoused this philosophy, and it has been echoed in numerous sources since. A book entitled Matching Youth and Jobs (Bell 1940) embodies the same rationalistic view that profiles of persons and jobs should be coordinated to produce the best possible fit. The philosophy expressed in these old publications generally is viewed as antiquated by contemporary professionals in vocational guidance. The contemporary view is that picking a career and adjustment to economic life are reflected in a developmental process that engages the broad self conception of each individual (Super 1957; 1963; 1972; 1974). But even Super, who is best know for

his emphasis on self concept and the dynamics of vocational life, emphasizes the importance of individuals engaging in a dynamic process of self assessment, information gathering, and matching their self concepts to their careers. For example, as early as 1953 Super wrote--

> Work satisfactions and life satisfactions depend upon the extent to which the individual finds adequate outlets for his abilities, interests, personality traits, and values; they depend upon his establishment in a type of work, a work situation, and a way of life in which he can play the kind of role which his growth and exploratory experiences have led him to consider congenial and appropriate (Super 1953:190).

Most other contemporary theories of career choice and adjustment express the basic idea of correspondence between individual characteristics and occupations or jobs. Holland's personality theory is, perhaps, most explicit (Holland 1973). Lofquist and Dawis (1969) propose that worker satisfaction and productivity depend on the matchup between individual needs and the job environment. Other major theoretical statements on career choice also contain this central point (e.g., Dudley and Tiedeman 1977; Ginzberg et al. 1951). These basic theoretical conceptions heavily influence at least the goals of guidance practice, as illustrated by the excerpt on guidance strategies from Shertzer (1982) quoted above.

Two central ideas are implicit in the view that the main function of career guidance is to assist persons in vocational choice and adjustment by improving self understanding and knowledge of the world of work. One is that individuals must assume responsibility for their own lives--adopt a <u>sense of agency</u> regarding their careers. The second is that individuals will develop realistic self concepts and realistic career plans, based on information and well thought out reasoning. These two ideas are strongly embeded in the guidance literature. Regarding a sense of agency, Herr, for example, has written:

> Implicit in such value positions [importance of informed choice] has been the intent of guidance and counseling to help persons become more purposeful and active in the management of the educational, occupational, and personal/social options available to them.... Such value positions stand in opposition to passivity or non-assertiveness in behalf of one's rights or one's aspriations, to idleness or to behavior that is not consciously goal directed (Herr 1982:156).

Herr is similarly explicit about the importance of intellegent choice--

> From the beginnings of this nation in the last century, guidance and counseling have had a continuing commitment to individual rights, to the facilitation of free and informed choice, and to helping persons develop intellegence about their personal characteristics and the opportunities available to them (Herr 1982:156).

In reviewing the works of Super, Ginzberg, Tiedman and other vocational development theorists, Osipow sums up as follows: "Finally, all these writers seem to assume that the ability and motivation to evaluate oneself realistically can be enhanced through education and counseling" (Osipow 1983:208).

These two implications of theory and practice--importance of a sense of agency and realistic assessment of self and of one's circumstances--provide the basis of the empirical hypotheses to be tested in this paper. First, we hypothesize that schools with active guidance programs foster a sense of agency in their students. Second, schools with active guidance programs produce students with realistic career plans and self assessments. The first hypothesis is tested by observing whether students in schools with active guidance programs express higher <u>internal</u> locus of control and higher self esteem than students in other schools. The second set of hypotheses is assessed by testing for statistical interactions. If the hypotheses are true, then the impact of ability, grades, and occupational plans on educational plans should be stronger in schools with active guidance programs than in other schools. Likewise, occupational plans should be more closely dependent on educational

plans and abilities in schools with active guidance programs than in other schools. Finally, perceived ability to complete college should depend more closely on objective indicators in strong school guidance environments than elsewhere. Obviously the general hypothesis implies a number of other interactions similar to those listed here, but absence of appropirate data precludes tests of other hypotheses.

Alternative Interpretations of Guidance Functions

The philosophy of guidance and counseling presumes a harmony between individual needs, abilities, and interests and demands in the labor market. Shertzer sums up his statement of guidance goals in the following terms:

> In short, while most guidance goals assume that with such programs [guidance programs summarized earlier in the article]--students will feel better, function better in school (and in life in all its aspects), achieve at higher levels, and live up to their potentials--there (sic) goals also imply adherence to the insitutions's mission as well (Shertzer 1982:16 Emphasis added).

The idea that individual needs and institutional demands generally are not in conflict is inherent in the hypothesis that individuals express their self concepts through their work. The importance of expressing self concept through work is a pervasive notion in the vocational development literature. Super (e.g., 1957; 1972) is the paramount proponent of this view.

For all or most individuals to find fulfillment in their work, however, requires that a sufficient quantity of jobs is available that permit and foster personal growth and development. This basic assumption (generally unstated) of the guidance and counseling philosophy has been repeatedly questioned. A number of flamboyant radical assessments have appeared in print (e.g., U. S. Department of HEW 1973; Bowles and Gintis 1976; Carnoy and Levin 1976; Grubb

1978; 1984; Grubb and Lazerson 1975; Warnath 1975). Most of these commentaries direct their attention to the relationship between education and work or vocational education and work, without specific mention of the role of guidance and counseling. Warnath, however, focuses specifically on contradictions he sees in career guidance and counseling. Regarding vocational theory he writes--

> One basic assumption underlying the current vocational theories is populist in nature: that each individual, with adequate motivation, information, and guidance, can move through the educational process to satisfying job goals that allow him or her to express personality characteristics or implement self-concept (Warnath 1975:422).

Regarding the job structure he poses the following contrasts:

> ...under present conditions, where almost all people work for organizations whose survival is dependent on generating profit and operating efficiency, the needs of the individual are subordinated to the goals of the organization (Warnath 1975:422).

The key mechanism here is a matter of incentives. The incentives are for profits and organizational stability, not for meeting the full range of employee needs. In commenting on the career education movement, Grubb and Lazerson emphasize a slightly different aspect of the basic point--

> ...human resources appear not to be particularly scarce or highly valued, as compared with capital resources. Nor is this illogical: an economic system in which investment and production decisions are made by a handful of owners and managers of privately owned capital, with the profit from production held by capital owners, will obviously work to develop capital to the greatest possible extent (Grubb and Lazerson 1976:245).

The issues raised by these strong assertions are exceedingly complex; their resolution falls far outside the scope of the present paper. But, given that they were true, one might expect different outcomes of guidance and counseling than those predicted by the goals/philosophy of the profession. To determine the implications of these ideas for the outcomes of guidance and

counseling, one must ask: If guidance and counseling do not do a good job of helping youth achieve self actualization through work (because the structure of jobs does not permit it), then what function do guidance and counseling serve? Radical critiques of schooling imply that guidance and counseling tend to serve the interests of business elites. In broad terms, Carnoy and Levin state the point as follows:

> In our view the schools of a society serve to reporduce the economic, social, and political relations... (Carnoy and Levin 1976:4).

Since guidance and counseling are part of the schools, they would perform functions that help to perpetuate existing status and power relationships. On this point there probably is little disagreement between the philosophy of guidance and counseling and the critics. The difference is that professionals in guidance and counseling tend to assume that the interests of individuals and demands in the social and economic system are not in conflict; the critics charge that they do conflict.

To this point we still do not have sufficient specificity from the radical critics to identify empirical relationships implied by their critique. Carnoy and Levin do provide the needed specificity. They claim that a primary function of schools, and by implication guidance and counseling, is carried out "... by developing lower-class children to be better workers and middle-class children to be better managers... (Carnoy and Levin 1976:9). Bowles and Gintis (1976) express a similar charge regarding the function of schooling. This same theme is expressed in a number of publications relating to curriculum tracking in U.S. high schools (Rosenbaum 1976; 1980; Alexander and McDill 1976; Alexander, Cook, and McDill 1978; Oakes 1982; Boyer 1982). The argument here is that tracking reinforces the stratification system by diverting lower

status youth and minorities away from the academic curriculum track. This basic idea is applied specifically to guidance and counseling in schools by Warnath (1975). Grubb and Lazerson (1976) agree and make a more specific charge than Warnath. They claim that the matching-people-to-jobs function of career education reinforces race and gender stereotypes as well as the relationships between parental social class and the plans of their children.

The critics, then, aver that lower class youth and minorities will be exposed to guidance activities that lead them to plan for low status, low paying jobs and to aspire to low levels of educational attainment. Given information on the content of career guidance for each individual student, therefore, one would expect to observe an intervening-variable model (similar to that proposed by the critics of curriculum tracking). In this model, status variables would affect the content of career guidance which would, in turn, influence educational and occupational goals and attainments. Data on individual exposure to career guidance are not available for the present paper, however. But extensive information is available describing how active the career guidance program in each school is. It is hypothesized on the basis of the critiques of schooling and guidance that the effects of status variables on educational and occupational plans of youth in schools with active career guidance programs are stronger than those effects in other schools. Additionally, one might expect a similar interaction regarding youths' perceived ability to complete college. If guidance and counseling tend to reinforce status characteristics of youth, then guidance activities would tend to persuade low status youth that they do not have the ability to attend college (and vice versa).

The implications of critiques of schooling and of career guidance for the impact of career guidance on locus of control and self esteem are not explicit in the literature. Nevertheless, it appears reasonable to infer that the critics would be skeptical of the capacity of guidance programs to excite a sense of agency in students, because of what the critics see as a glaring contrast between the philosophy of self actualization through work and the lack of opportunity for work activities that permit personal growth and development.

These predictions drawn from the goals of career guidance and from critics of the schools and guidance are summarized in table 1.

Data

The data used in this paper are part of the High School and Beyond data base. The High School and Beyond (HSB) survey was sponsored by the National Center for Education Statistics, and the data collection was carried out by National Opinion Research Center (NORC). The HSB is a major longitudinal survey of high school youth. Base year data were collected in 1980, the first follow-up was completed in 1982, and the second follow-up was conducted in 1984. Plans call for additional follow-ups at 2-year intervals. The base year survey contains data describing over 58,000 student respondents, split between students who were sophomores (N = 30,030) in 1980 and those who were seniors (N = 28,240).

Students in the sample completed questionnaires at each wave of data collection. The base year questionnaires requested information about respondents' background, personal characteristics, school experiences, career aspirations, attitudes toward work, part-time work during high school, and a number of other topics. The first follow-up for the younger cohort repeated most of

TABLE 1

HYPOTHESES

Predictions Implied by Guidance Goals	Predictions Based on School Guidance Critics
Linear Relationships	
Students attending schools with active career guidance programs exhibit stronger internal locus of control than students attending other schools.	Guidance programs do not have the expected effect on locus of control.
Students attending schools with active guidance programs exhibit more positive self-esteem than do other students.	Guidance programs do not have the expected effect on self esteem.
Interaction Relationships	
The effects of test scores, grades, and occupational plans on educational plans are stronger in schools with active career guidance programs than in other schools.	The effects of race, gender, and socioeconomic background are stronger in schools with active career guidance programs than in other schools.
The effects of test scores, grades, and educational plans on occupational plans are stronger in schools with active career guidance programs than in other schools	The effects of race, gender, and socioeconomic background are stronger in schools with active career guidance programs than in other schools
The relationships between perceived ability to complete college and objective indicators of ability such as test scores and grades are high in schools with active career guidance programs than in other schools.	This interaction is not predicted explicitly, but it is inferred that perceived ability to complete college is more dependent on race, gender and socioeconomic background in schools with active guidance programs than in other schools.

the questions in the base year questionnaire, thus permitting extensive analysis of change. The first and second follow-ups of the older cohort and second follow-up of the younger cohort requested detailed information regarding work, family formation, education, military service, and attitudes. In addition to the student questionnaire data, a lengthy questionnaire was completed by the principal or other administrator of each school during the first two waves of data collection, students completed cognitive tests, teachers completed a brief checklist in the base year only, and a subsample of parents completed base year questionnaires. (See Jones et al. 1983 and Frankel et al. 1981 for more detail).

In addition to the primary HSB data, five research institutions formed a consortium to collect supplemental data from principals, teachers and other staff in approximately half of the original HSB schools. Members of the consortium are--

The National Center for Research in Vocational Education
The Ohio State University
Columbus, OH 43210

The Wisconsin Center for Education Research
The University of Wisconsin-Madison
Madison, WI 53706

The Institute for Research in Educational Finance and Governance
Stanford University
Stanford, CA 94305

The Center for Educational Policy and Management
The University of Oregon
Eugene, OR 97403

The Center for Social Organization of Schools
Johns Hopkins University
Baltimore, MD 21218

Members of the consortium have shared expenses of a subcontract with NORC to collect the data, have cooperated in constructing the survey questionnaires,

and divided the work of data preparation. Data collection for the Supplemental Survey occurred in the spring of 1984. It would have been preferrable to have coordinated the timing of this data collection with that of the first follow-up HSB survey, in order to describe schools during the time period in which respondents were in attendance. The generally slow pace of change in institutions such as schools, however, suggests that the timing of the Supplemental Survey is not a serious enough problem to distort the major patterns of relationships.

Five questionnaires were prepared for the Supplemental HSB survey, one corresponding to each of five types of respondents: high school principal, teachers, vocational coordinator, head of guidance, and community service coordinator. Up to 30 teachers in each school responded to the teacher questionnaire; only one respondent per school completed each of the other questionnaires. (See Jones, Knight, and Ingels 1984 for more detail on the Supplemental Data collection).

This paper makes use of the base-year and first follow-up questionnaire data on the younger cohort (1980 sophomores), base-year and first follow-up test scores, base year principal data from the main HSB survey, and information from the guidance questionnaire associated with the Supplemental Survey. Information from the guidance questionnaire of the Supplemental Survey and the principal questionnaire of the main survey was merged with student data such that each student (up to 36) in a given school was assigned the same value on all variables taken from those two questionnaires. Because less than half of the original HSB schools participated in the Supplemental Survey, the sample size of the merged data is 10,955.

Variables

Five broad categories of variables are used in this study--outcomes, career guidance program characteristics, lagged outcome measures, socioeconomic background and ascribed status characteristics, and geographic regions.

Outcomes

There are five outcomes--locus of control, self esteem, perceived ability to complete college, educational expectation, and occupational expectation. Their operational definitions are summarized as follows:

- Locus of control--scale consisting of six items such as "Good luck is more important than hard work for success." Five response categories ranging from strongly agree to strongly disagree were provided. Items such as the one quoted were reflected so that the scale is calibrated such that high numeric values represent high internal locus of control.

- Self esteem--a six-item scale consisting of items such as "I take a positive attitude toward myself." The same response categories used for locus of control were used here. All items in the index were scaled so that high numeric values represented high (strong) self esteem.

- Perceived college ability--response to a single item: "Whatever your plans, do you think you have the ability to complete college?" (1=yes, 0=no).

- Educational expectation--response to the question: "As things stand now, how far in school do you think you will get?" Nine response categories were provided. These are scaled to reflect approximate number of years of schooling.

- Occupational expectation--response to the item: "Write in here the name of the job or occupation that you expect or plan to have when you are 30 years old. Even if you are not sure, write in your best guess. Which of the categories below comes closest to describing that job? Seventeen broad response options were provided. A Duncan SEI estimate for each occupational category defines the numeric value of the variable. Nonoccupational categories such as "not working" and "homemaker or housewife only" were coded missing.

Career Guidance Program Characteristics

The fundamental concept that we intend to reflect in the measures of career guidance program characteristics is the degree to which a school has an active guidance program in place. By active program is meant heavy student usage of a variety of career guidance services. While many additional variables describing the guidance programs of schools are available in the data--such as program goals, linkages to the community, and resources devoted to planning--for this initial paper on effects of guidance it was decided to confine attention to variables reflecting student usage. Presumably, other variables such as goals and planning affect student outcomes through their impact on the composition and usage levels of services.

A total of 23 variables were constructed. Nineteen of these are primary variables, and the remaining four are indexes defined on the 19. Out of the 19 primary variables, 15 are defined as products of percentage of students using the service and a measure of usage intensity or frequency. These 15 types of services are: (1) courses in career decision making, (2) occupational information units in subject-matter courses, (3) individual counseling, (4) group guidance or counseling, (5) exploratory work experience (e.g., COOP), (6) career days, (7) vocational assemblies or speakers in classes, (8) job-site tours, (9) tours of postsecondary institutions, (10) job shadowing, (11) simulations such as Singer or SRA job experience kits, (12) testing for career planning purposes, (13) training in job seeking skills, (14) noncomputerized career information, and (15) computerized career information. Four additional primary variables are defined by respoonses to single items; these are: percentage of students using educational information resources such as college catalogues, percentage of students using computerized career information,

hours per day of student use of computer terminals for career guidance, and hours per day of student use of microcomputers for career guidance.

In constructing indexes, the primary variables were divided into two subsets. The first consists of four primary variables: (1) courses in career decision making, (2) occupational information units in subject-matter courses, (3) individual counseling, and (4) group guidance and counseling. These four variables are classified as the central technology of guidance and counseling, and the remaining variables are classified as secondary technology.* The four indexes were defined with this classification in mind; they are--

central technology = average of four primary variables measuring central technology

secondary technology = average of remaining variables

weighted summary = 3*core technology + secondary technology

unweighted summary = average of all primary variables

The measurements defining the primary variables were defined by estimates provided by the respondent to the guidance questionnaire in each school in the Supplemental HSB Survey.

Lagged Outcome Measures

Due to the longitudinal design of the HSB data, two measures of each outcome for each student respondents are available, one when respondents were high school sophomores and one two years later. The dependent variables in the regressions are always defined by the time-two measure. In every case, the corresponding time-one measure is included as one independent variable.

*This classification is based on a reading of the guidance literature (e.g., Gysbers and Moore 1981) and on conversations with career guidance professionals. Special thanks are due to Juliet Miller in this connection.

Status Characteristics

Fourteen status characteristics were entered in each regression equation as statistical controls. These characteristics are: (1) gender (1=female, 0=male), race (1=black, 0=other), ethnicity (1=Hispanic, 0=other), father's occupation (Duncan SEI assigned to 14 broad occupational categories), father's education (approximate number of years), mother's occupation (Duncan SEI to same categories used for fathers), mother's education (defined as for fathers), log of family income, number of siblings, father not in household (1=not in household, 0=in household), mother not in household (defined as for father), number of family possessions from a checklist (e.g., two or more cars/trucks, 50 or more books, own bedroom), whether family owns home (1=yes, 0=no), and number of rooms in the home. The first three of these variables are ascribed status characteristics; the rest are indicators of the socioeconomic status of one's family.

In addition to the substantive status variables, five missing-data dummies were included in each regression that also included the corresponding status characteristic. One missing data dummy is associated with each of the following variables: father's occupation, father's education, mother's occupation, mother's education, and family income. The missing data dummies help to resolve in an empirical way what would otherwise be knotty conceptual and measurement difficulties such as how to treat mother's occupation if she reports she is a "housewife only" or how to compensate for the likelihood that reporting errors on income are negatively correlated with income.

Region

Dummy variables for each of eight geographic regions as defined by the U.S. Bureau of the Census are included in the regressions. The West North

Central region is omitted and therefore becomes the comparison group. These variables are included because past experience with the HSB data shows that they affect results on substantive questions, even when extensive controls for other variables are included.

Models and Analysis

Although longitudinal data generally are viewed as affording critical benefits not available in cross-sectional data, exactly how longitudinal data can best be used to help identify cause-and-effect relationships is not self evident. A number of questions immediately arise: Should the dependent variables be change scores, or should the dependent measures be time-two (or later) observations with one or more lagged measure(s) of the dependent variable included as regressor(s)? If change scores are dependent variables, should a lagged measure of the dependent variable be included as a regressor? Should the independent variables all be limited to lagged measurements, or should change scores and/or concurrent measures of the independent variables be included as regressors? How should regression coefficients be interpreted if the lag time between cause and effect is not the same as the lag time between measurements? What processes occur during the interval between measurements that generate the relationships observed in the data? There are no easy answers to any of these questions.

It is argued here that the answer to each of these questions must depend on an explicit model of the processes that operate over continuous time to generate the observed data. Different models certainly will imply different answers to the questions. Generally it will not be possible to achieve a

definitive choice between conflicting models by estimating parameters from information in a given data set. The reason is that there are always more unknown parameters than estimating equations. Ultimately, these choices must be made on the basis of comparisons of forecasts made from different models.

With this background in mind, the paper presents a rudimentary differential equation model as the basis for the empirical work with regression analysis. Differential equation models express hypotheses about the process of change over continuous time (Coleman 1968; Doreian and Hummon 1976; Rosenfeld 1980). A partial adjustment model provides a heuristic basis for connecting the substantive theory to the equations (Doreian and Hummon 1974; Rosenfeld 1980). Suppose that y_1 represents the number of years of education that a youth expects to complete at time t. Changes in y_1 over each short interval of time dt occur in the direction of an equilibrium value y_1^*. These ideas are represented succinctly in the following expression

$$(1) \quad \frac{dy}{dt}1 = b(y_1 - y_1^*), \quad b<0,$$

where dy_1/dt is the change rate over the short time interval dt (lim dt --> 0), and b is a constant. Since b is negative, changes in y always lead toward the equilibrium value y_1^*.

If y_1^* is postulated to be a function of other variables thought to influence educational plans, then the model is transformed into one about interrelationships among variables operating over continuous time. In the present case, let y_1^* be a linear function of occupational plans, test scores, grades, exogenous status characteristics, and region--

$$(2) \quad y_1^* = p_o + p_1x_1 + \ldots + p_Jx_J + q_2y_2 + \ldots + q_Ky_K ,$$

where x_J are exogenous variables, and the y_K are occupational plans, test scores, and grades--variables that may be affected by educational plans and by each other (i.e., endogenous variables).

Inserting equation (2) into (1) generates a linear differential equation of the following form:

$$(3)\quad \frac{dy}{dt}1 = a_o + a_1X_1 + \ldots + a_JX_J + b_1y_1 + \ldots + b_Ky_K$$

with $a_j = -bp_j$, and $b_K = -bq_K$ ($K \neq 1$; $b_1 = -b$). The same reasoning can be applied to each endogenous variable so that an entire system of differential equations of the form of (3) results. This system exhibits the structure of a cross-lagged regression analysis--

$$(4)\quad y_t = \overset{*}{A}(t)X + \overset{*}{B}(t)y_o$$

where

y_1 = Kx1 vector of observations on the endogenous variables at time 1,
y_o = Kx1 vector of observations on the endogenous variables at time 0,
x = Jx1 vector of observations on exogenous variables, all assumed constant over time,
$\overset{*}{A}(t)$ = KxJ matrix of coefficients,
$\overset{*}{B}(t)$ = KxK matrix of coefficients.

(see Coleman 1968; Doreian and Hummon 1976; Hotchkiss 1979 for more complete development).

Equation (4) predicts a time trend for each endogenous variable for every point along the continuous time scale. Hence, in principle, the model can be tested by evaluating the forecasts it generates. In fact, however, observations from at least three time pints are required (Hotchkiss and Chitegi 1981).

In the present paper, equation (4) is used to justify the statistical estimation procedure. It answers the key questions posed above: (1) It does not matter whether change scores on time-two measures are treated as the dependent variables so long as the lagged (time one) measures are included as regressors. [From (4), $y = \overset{*}{A}(t)x + [\overset{*}{B}(t)-I]y_0$, where I is a conformable identity matrix and $y = y_t - y_0$]. (2) Change scores and concurrent measures of independent variables should not be used as independent variables in the regressions. (3) The regression coefficients calculated from a cross-lagged regression index the total effects accumulated over a specific interval of time. This point derives from the fact that the regression coefficients are seen to be dependent on the length of time between measurements. Thus, a two-wave panel with one-year spacing between waves is predicted to generate different regression coefficients than a study with two-year spacing. The model not only leads one to expect this discrepancy but also yields exact numeric predictions about the magnitudes of the discrepancies.*

In brief, then, the statistical analyses in this paper consist of cross-lagged regressions in which time-two measures of outcomes are dependent variables, and the regressors are comprised of lagged endogenous variables and exogenous variables. This particular specification of the regressions is selected because it is consistent with an explicit model of process over continuous time. Numerous other possible specifications are easy to imagine (several are listed above), but the connection between these alternative specifications and the processes that generated the observations is not so easy to imagine. Unless the regressions are connected to a process model, their

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*One of the more interesting aspects of the results under discussion here is that even the sign of the coefficients may depend on the length of time between measurements, though sign reversal probably would be rare in practice.

specification appears ad hoc. Certainly, without such a connection, the empirical results could not be used to generate forecasts over any time interval whose length were not equal to the length of time between measurements in the data used to estimate parameters of the model. Indeed, it would be easy to specify regression equations that could not be used in forecasts at all.*

Unfortunately, the differential-equation model does not help resolve issues regarding proper methods of statistical estimation. This is because all estimation methods depend (explicitly or implicitly) on assumptions regrading disturbance variables, and the differential equation model contains no hypothesis about the disturbances. In principle, this problem could be remedied by including specification of the behavior of disturbances over time (see Arminger 1983 for an example), but such specification is seldom included in practice. By far the simplest solution to statistical estimation is to apply ordinary least squares (OLS) regression to the cross-lagged structure. This strategy can be justified on grounds that all regressors are predetermined (either exogenous or lagged endogenous) and hence independent (or at least uncorrelated) with all disturbances (Goldberger 1964). On the other hand, Hannon and Young (1977) point out that OLS estimation is particularly susceptible to miss specification of the type characterized by omission of an exogenous variable that is constant over time but varies among respondents. They show how to correct for this type of problem by methods of pooling cross-sections and time series, but the methodology requires at least measures from three points in time. In the final analysis, any estimation method can be shown to be biased if key assumptions are violated. Researchers therefore

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*One example is the case in which all dependent and independent variables are defined as change scores.

are left to make judgments regarding which set of assumptions seems most plausible. There seldom exists sufficient information to justify one set of assumptions over another. Lacking clear reason to do otherwise, therefore, this paper applies OLS regression, because of its ease of application and interpretation and because it is derived from a mean-square error criterion. If the ultimate goal is to generate accurate forecasts, then it is sensible to estimate coefficients in a way so as to minimize prediction error.

Results

Table 2 displays partial standardized regression coefficients to assess the hypotheses that schools with active careeer guidance programs foster internal locus of control and high self esteem. Four separate regressions are reported for each of these two outcomes; the first one includes 14 separate indicators of usage of the guidance program. The second includes two indexes of usage, one for the central technology and one for the secondary technology. The third and fourth include the weighted and unweighted summaries, respectively. It should be noted that each equation contains controls for the lagged dependent variable, an array of 14 status characteristics, and eight region dummies.

The findings are easily summarized. There is not a single effect estimate in the table that is large enough to be noteworthy. While a few scattered statistically significant coefficients occur, the largest in absolute magnitude is less than .03. Thus, it is concluded that none of the separate indicators of usage nor any of the aggregated indexes affects locus of control or self esteem.

Calculations for the interaction models were carried out by running separate regressions for each category of a dichotomy created from the "central-

TABLE 2

EFFECTS OF GUIDANCE ON LOCUS OF CONTROL AND SELF ESTEEM

Independent Variables	Dependent Variables: Locus of Control				Self Esteem			
Exploratory work experience	.0071§	--	--	--	.0200§	--	--	--
Career days	.0112	--	--	--	.0161	--	--	--
Voc. assembler/speakers	-.0016	--	--	--	-.0230§	--	--	--
Job-site tours	.0220+	--	--	--	.0050	--	--	--
Tours of post. sec. insts.	-.0147	--	--	--	-.0041	--	--	--
Job shadowing	-.0033	--	--	--	.0013	--	--	--
Simulations	-.0130	--	--	--	.0018	--	--	--
Testing for guidance	.0133	--	--	--	.0091	--	--	--
Training in job search	-.0177	--	--	--	-.0291*	--	--	--
Noncomputerized career info.	-.0097	--	--	--	-.0043	--	--	--
Computerized career information	.0181	--	--	--	.0273	--	--	--
Courses in career decision making	-.0075	--	--	--	-.0230+	--	--	--
Occupational info. units	.0141	--	--	--	.0251+	--	--	--
Individual counseling	-.0195+	--	--	--	.0287	--	--	--
Group guidance	.0010	--	--	--	.0088	--	--	--
Central technology index	--	-.0037	--	--	--	.0186	--	--
Secondary technology index	--	-.0032	--	--	--	-.0123	--	--
Weighted summary	--	--	-.0058	--	--	--	.0100	--
Unweighted summary	--	--	--	-.0050	--	--	--	.0244

NOTES: 1. Entries are standardized regression coefficients.

2. Each equation contained controls for region dummies all status background variables (listed in section titled "variables," and lagged outcomes measure).

3. Absent entry means variable omitted from the equation.

4. § p ≤ .10.
   + p ≤ .05.
   * p ≤ .01.

technology" variable. Central technology was split at its mean, but due to skew in its distribution, about two-thirds of respondents ended up in schools below the mean. Table 3 displays regression coefficients associated with the interaction hypothesis. The columns labled "inactive" indicate that the regressions were calculated for respondents attending schools which were below the mean on central technology. Columns labled "active" indicate regressions calculated on remaining respondents.

There are no interactions of noteworthy magnitude in table 3. The pattern of effects in each equation is sensible, but that pattern does not differ in any substantial way between schools with "active" and schools with "inactive" guidance programs.

When several variables are used to indicate broad concepts such as status background and ability, the number of variables included in a regression equation to represent each broad concept may obscure the fundamental results. to offset this possibility, regressions were specified using restrictions on the coefficients to simulate use of two indexes, one to represent status background and one to represent objective measures of ability. The main patterns stand out in bold relief with the indexes. Both background and ability measures influence educational expectations, occupational expectations, and perceived college ability. The direct influence of the ability index is higher than that of background, but no interactions by level of activity in the guidance program are observed.

The conclusion is clear, based on the data presented here, neither the predictions drawn from career guidance goals nor those based on the critiques of schooling and guidance are supported. In fact, attending a school that has an active career guidance program does not appear to have much affect one way or the other on any of the outcomes studied here.

TABLE 3

INTERACTION MODELS

	Dependent Variables (time 2)					
	Occupational Expectation		Educational Expectation		Perceived Coll. Ability	
	Guidance Program:		Guidance Program:		Guidance Program:	
	Inactive	Active	Inactive	Active	Inactive	Active
Gender (1=female, 0=male)	5.6162	5.3888	-.0776	-.0581	.0389	-.0175
	(.1238***)	(.1196***)	(-.0155)	(-.0116)	(.0329**)	(-.0256)
Race (1=black, 0=other)	2.1718	2.3849	.7771 *	.4548	.2638.1862	
	(.0331+)	(.0408+)	(.1072***)	(.0684***)	(.0381***)	(.0738***)
Ethnicity (1=hispanic, 0=other)	-.1852 +	3.0854	.1963	.1378	.0327	-.0535
	(-.0039)	(.0474*)	(.0276*)	(.0166)	(.0125)	(-.0223)
Father's occupation	.0525	.0388	(-.0321)	.0013	.0116	.0.0
	(.0540**)	(.0428**)	(-.0193	(.0122)	(.0157)	(.0268)
Father's education	.4661	.4531	.1358	.1160	.0378	-.0123
	(.1011**)	(.1030+)	(.0661***)	(.0339***)	(.0378)	(-.0274)
Mother's occupation	.0434	.0258	-.0024	-.0026	-.0032	.0010
	(.0495+)	(.0269)	(-.0039)	(-.0059)	(-.0066)	(.0324)
Mother's education	.3659	.3461	.1325	.1162	.0148	.0034
	(.0632+)	(.0601.6)	(.0207***)	(.0175***)	(.0625+)	(.0147)
Number of siblings	.1097 +	-.3738	-.0790 +	-.0574	.0244	-.0127
	(.0107)	(-.0374*)	(-.0169+)	(-.0526***)	(.0126)	(-.0315+)
Father not in HH (1=out, 0=in)	.3484	-.4860	-.0137	.0503	.0513	-.0.2.
	(.0058)	(-.0284)	(-.0022.)	(.0029.)	(.0.0286)	(-.0252)
Mother not in HH (1=out, 0=in)	1.1716	1.0618	-.0988	.0.0.	-.0312	-.0239
	(.0170)	(.0115)	(-.0267)	(.0257)	(-.0274)	(-.0264)
Log of family income	1.3927	.8632	.3222	.2050	.1126.0625	
	(.0575+)	(.0228)	(.1196***)	(.0829+)	(.1114***)	(.0731+)
Number of possessions	-5.3612	3.9695	-.1764	-.0386	.0324	.0291
	(-.0505**)**	(.0362.6)	(-.0152)	(-.0279)	(.0320)	(.0471+)
Home owner (1=yes, 0=no)	1.4599	-.0319	-.1155	-.1283	-.0178	-.0305
	(.0267+)	(-.0026)	(-.0191+)	(-.0223)	(-.0124)	(-.0166)
Number of rooms in home	.1134	-.2784	.0056	.0173	-.0057	.0023
	(.0097)	(-.0268)	(.0043)	(.0133)	(-.0081)	(.0182)
Education exp., base year	.7385	.7.66	.3353	.3613	.0236	.0295
	(.0839***)	(.0844***)	(.3479***)	(.3747***)	(.0661***)	(.0634***)
Occupational exp., base year	.2453	.2752	.0054	.0057	.0314	.0315
	(.2436***)	(.2145***)	(.0578***)	(.0490**)	(.0337+)	(.0362+)
Coll. ability, base year	1.2864	.7367	.1977	.1461	.2922	.2665
	(.0562***)	(.0332+)	(.0833***)	(.0576**)	(.3318***)	(.2857***)
Verbal test score (base year)	.2728	.2508	.0272	.0144	.0128	.0235
	(.1069***)	(.1185***)	(.0382***)	(.0518+)	(.1241***)	(.0857**)
Math test score (base year)	-.0265	.0327	.0221	.0176	.0021	.0250
	(-.0109)	(.0139)	(.0752***)	(.0655**)	(.0211)	(.0526+)
Science test score (base year)	-.0347	-.0488	.0035	.0029	.0226.0227	
	(-.0155)	(-.0222)	(.0158)	(.0118)	(.0838*)	(.0283)
Civics test score (base year)	.0275	.1066	.0343	.0.24	.0231	.0226
	(.0122)	(.0481+)	(.0174)	(.0123+)	(.0332+)	(.0291)
Grade average (base year)	.9828	.3731	.2282 *	.3355	.1225	.1323
	(.0341+)	(.0132)	(.0716***)+	(.1042***)	(.0868***)	(.1157***)

NOTES: 1. Entries not enclosed in parentheses are unstandardized partial regression coefficients, and can therefore be compared between "active" and "inactive" columns. Entries enclosed in parentheses are standardized regressions and can therefore be compared within columns (across variables).

2. Indicators of level of statistical significance following the standardized coefficients apply to the single coefficient in the conditional equation. Indicators of statistical significance displayed outside of parentheses test the hypothesis that coefficients differ between columns. Tests of the significance of the differences comparing all coefficients in "inactive" schools to those in "active" schools are significant at $p \leq .05$ in all three equations.

3. Each equation included controls for 8 region dummies.

4. $ p \leq .10$, + $p \leq .05$, * $p \leq .01$, ** $p \leq .001$, *** $p \leq .0001$.

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Summary and Conclusions

This paper assesses effects of school career guidance programs on five outcomes which, it is argued, reflect the central mission of career guidance as expressed in the professional guidance literature. First, it is concluded that a fundamental goal of guidance is to inculcate a sense of agency or mastery over one's career. Two outcomes are used to index sense of agency--locus of control and self esteem. Of the two, locus of control has by far the best face validity as an index of sense of agency or control over one's fate. A variety of measures of the degree to which schools have in place an active career guidance program fail to reveal any substantial influence on either of those two outcomes. There is a slight tendency for larger effect estimates to be associated with self esteem, but no effects are of substantial magnitude.

It is inferred from critiques of career guidance that guidance programs do not affect students' sense of agency, because the economy does not produce jobs with outlets for personal development in sufficient number so that most students would believe that they were masters of their occupational fates. Consequently, the data tend to support the critics on this point. Support for the critics is not strong, however, because effects of guidance on students' sense of agency is not a central part of their critique.

The second fundamental aspect of guidance philosophy that is addressed in this paper is the notion that career guidance should assist students to develop their career goals and self precepts in line with objective evidence available to them. On the basis of this goal it is predicted that youth attending schools with active guidance programs will develop educational expectations, occupational expectations, and perceived ability to compelte college that are more closely associated with each other and with objective indicators of

ability such as test scores and grades than is the case for students attending schools with less active guidance programs. On this point, the goals of guidance come more directly to loggerheads with critics than is the case regarding effects of guidance on youths' sense of agency. The critics charge that guidance programs reinforce the influence of status characteristics on career goals and perceived college ability. The data do not support either viewpoint. Few statistical interactions of the type predicted from either source are statistically significant, and none are of substantial magnitude.

Recent reviews of empirical evaluations of career-guidance effectiveness have concluded that guidance does indeed produce the outcomes it is intended to produce. Although our own review of this evaluation literature is somewhat more skeptical, the focused evaluation studies apparently have produced more evidence of the effectiveness of guidance than is presented in this paper. There are several possible reasons for this discrepancy. First, the present paper examines effects of guidance programs in schools; whereas, most of the evaluation studies assess the effectiveness of specific guidance techniques in producing short-run changes in outcomes that are tailored to assess effects of the treatment. In essence, the present study assesses whether the combined effects of a number specific guidance activities in a school are large enough to be detected in changes occuring over a two-year time interval.

A second likely reason for the discrepancy between the findings of this study and those of the evaluation studies is that the outcomes of this study are not the same as those most commonly used in the evaluation studies. Specially designed batteries of questions to assess high level concepts such as "vocational maturity" are the most frequently used measures of outcomes in the evaluation studies. In contrast, the present study uses standard measures of

career expectations, a measure of perceived ability to complete college, an index of self esteem, and an index of locus of control. If, for example, the present study had had available a scale of locus control designed specifically to focus on career content, the results of the study might have been different.

Another potentially important difference between the study and many of the evaluation studies is the use of random assignment in the evaluation studies and its absence in the present case. No matter how carefully one specifies a structural equation, without random assignment there is always the possibility that some misspecification has occurred. However, to argue that omission of an important variable from our equations accounts for the findings, one must identify one or more important "supressor" variables. Experience shows that superssor variables are rare in practice.

A fourth possible reason for the discrepancies between our findings and those of the evaluation studies is the chance that motivation x treatment interactions account in part for the more positive findings of the evaluation studies. Many of the evaluation studies were conducted with volunteer samples, implying high motivation. If, as was observed by Borman (1972), treatment effects only occur for highly motivated students, one would not expect to see strong evidence of career-guidance effectiveness in a large general sample.

Certainly, this study has not produced conclusive evidence that career guidance programs in high school are ineffective. It has, however, raised important questions. Some of those questions are substantive and some are conceptual. Consider the substantive issues first. For the moment, assume that a number of specific guidance "technologies" are available that operate

as they were designed to operate when implemented "properly." Why don't these specific interventions aggregate up to the school level so that schools with heavy usage of guidance activities can be differentiated from those with low usage? One possibility is lack of resources in nearly all schools to produce an integrated program with a effectiveness above a critical threshold needed to produce measurable results. Another possibility is lack of careful planning at the school level. It may be necessary to coordinate and oversee specific guidance activies in a vigorous fashion to produce effects of specific activities that are consistent enough to be observed at the school level. If this speculation is correct, then use of some systems approach such as the Career Planning Support System might pay important dividents. Another possibility is that family influence on matters related to careers is so strong that guidance programs cannot penetrate it. The sociological literature on status attainment has documented repeatedly that parental influence or educational and occupational goals far exceeds the influence of school personnel and peers. These findings reinforce the informal observation that it is difficult for a guidance counselor to persuade an able youth from lower class culture to attend college or dissuade a student with average math ability from entering an engineering program if the parents are set on him or her doing so.

One central conceptual issue implied by this paper is how should the outcomes of careeer guidance be defined? The goals of guidance are expressed in diffuse terms and make use of what may be termed secondary or tertiary concepts, that is, concepts defined by other more fundamental concepts. The concept of realism of choice is an important case in point. It is defined by how well one's career plans match up to abilities, interests, and opportunities. The guidance evaluation literature typically attemps to get a direct

measure of realism by using judges, for example. Here, we have defined realism by reference to the magnitude of the effects of ability indicators and occupational plans, for example, on educational plans. In defining realism by reference to effects (e.g., regression coefficients), differential realism among individuals implies statistical interaction. This strategy is appealing for two reasons. First, it entails expressing the theoretical/conceptual scheme in structural equation form, thus making the theory more explicit than would otherwise be the case. Second, it reveals implications of the theory that can be tested on a number of data sets such as the HSB that were not collected for the express purpose of evaluating career guidance.

Although this paper does not support the contention that strong career guidance programs produce the intended effects on students, neither does it support the viewpoint of the critics of schooling--that career guidance tends to reinforce inequitable transfer of status from parents to offspring. Thus, the present findings challenge the critics either to produce evidence contradicting the conclusions offered here or to identify mechanisms other than career guidance in schools that perform the key roles that the critics claim for schools. Certainly other mechanisms have been identified by the critics (e.g., curriculum tracking), but in view of the key function that career guidance ostensibly plays in slotting youth into career lines, it seems incombent on the critics to explain why guidance does not have the impact that their critiques imply it should have.

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